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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,721	04/14/2004	Takashi Shirakawa	023971-0410	4755
22428	7590	11/07/2005	EXAMINER	
FOLEY AND LARDNER LLP			NAGY, MARC I	
SUITE 500			ART UNIT	
3000 K STREET NW			PAPER NUMBER	
WASHINGTON, DC 20007			3748	

DATE MAILED: 11/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/823,721

Applicant(s)

SHIRAKAWA, TAKASHI

Examiner

Marc I. Nagy

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 14 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 08312005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 04/01/2004 is acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97 and 1.98. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: S1007, S1008 (Fig. 50), 331 (Figs. 55A, 55C), B (Fig. 55C).
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: step S1, 333.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the

Art Unit: 3748

changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities:

5. On page 8, line 30, the reference number for "intake throttle valve" should be "17" instead of "14".
6. On page 9, lines 2 and 14, and page 10, lines 4, 14, and 16, "ECU 61" is not included in Fig. 1.
7. On page 12, line 17, "ECU 1" should be "ECU 61".
8. On page 13, line 6, "ECU61" should be "ECU 61".
9. On page 24, line 6, "S523" should be "S532".

Appropriate correction is required.

### ***Claim Objections***

10. Claim 14 is objected to because of the following informality: the word "device" should be inserted between "purifying" and "disposed" in line 2.
11. Claim 15 is objected to because of the following informality: the word "for" should be inserted between "means" and "being" in line 5.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

Art Unit: 3748

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-4, 6-11, 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Yasuhisa Kitahara (U.S. Patent Application No. US 2004/0016227 A1). In regard to claims 1, 13-15, Kitahara discloses an exhaust gas purifying system for an internal combustion engine (diesel engine 1) comprising: an exhaust gas purifying device disposed in an exhaust passage of the engine to remove specific content (NO<sub>x</sub> trap catalyst 13); and a control unit (control unit 20) arranged to determine a recovery execution timing (paragraph 43); to determine a target air/fuel ratio for executing recovery processing (paragraph 47); to determine a first engine controlled variable relating to an air/fuel ratio (paragraph 58); and to determine a second controlled variable relating to a combustion period at a recovery processing value different from the normal processing value (paragraph 60).

In regard to claim 2, Kitahara discloses an exhaust gas purifying system wherein the control unit is arranged to increase a temperature of the exhaust gas higher than normal processing temperature by changing the second engine controlled variable (paragraphs 72 and 73).

In regard to claim 3, Kitahara discloses an exhaust gas purifying system wherein the second engine controlled variable includes one of a main injection timing, a pilot injection quantity and a pilot injection (paragraph 28).

In regard to claim 4, Kitahara discloses an exhaust gas purifying system wherein the main injection timing is retarded after a top dead center, and the pilot injection timing is advanced (paragraph 3).

In regard to claim 6, Kitahara discloses an exhaust gas purifying system wherein the target air/fuel ratio for the recovery processing is richer than the target air/fuel ratio for normal processing (paragraph 60).

In regard to claim 7, Kitahara discloses an exhaust gas purifying system wherein the exhaust gas purifying device includes a particulate filter (diesel particulate filter 14).

In regard to claim 8, Kitahara discloses an exhaust gas purifying system wherein the exhaust purifying device includes a NO<sub>x</sub> trap catalyst for trapping NO<sub>x</sub> in the exhaust gas and discharging the trapped Nox according to the air/fuel ratio (paragraph 32).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 5, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara in view of Surnilla (U.S. Patent No. 6,568,177). In regard to claim 5, Kitahara discloses the claimed invention except for the exhaust purifying system's control unit being further arranged to determine an unusual basic value for the second engine controlled variable and to determine the second engine controlled variable by correcting the unusual basic value on the basis of the exhaust gas temperature. Surnilla teaches another exhaust purifying system wherein the second engine controlled variable (i.e. injection timing) correction or adjustment (column 35, lines 14-50, and Figure 4) is determined with the parameter of the exhaust gas (i.e. catalyst) temperature. It would

Art Unit: 3748

have been obvious to one having ordinary skill in the art at the time the invention was made to design the exhaust purifying system to combine the parameters used by Kitahara and Surnilla to further increase the fuel efficiency of the exhaust purifying system and/or adjust the timing to warm the catalytic converter and increase the catalyst's efficiency.

In regard to claims 9 and 10, Kitahara discloses the claimed invention except for the control unit being further arranged to determine the first engine controlled variable basic value, determine the first engine controlled variable (i.e. air/fuel ratio) by correcting the basic value, and correct the basic value when the target air/fuel ratio is richer and change the air/fuel ratio. Surnilla teaches another exhaust purifying system wherein the control unit executes a routine to adaptively learn a correction value for the air/fuel ratio based on the detected air/fuel ratio when the air/fuel ratio is richer than or equal to a stoichiometric air/fuel ratio (i.e. not lean) (column 10, lines 45-54). It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the exhaust purifying system to correct the first engine controlled variable based on the detected air/fuel ratio to ensure operation of the control unit is based on accurate data.

In regard to claim 11, Kitahara discloses the claimed invention except for the control unit arranged to determine the first engine controlled variable by correcting the basic value on the basis of the detected air/fuel ratio and to change the intake air quantity. Surnilla teaches another exhaust purifying system wherein the control unit determines that the intake air quantity should be adjusted (step 520) according to the

Art Unit: 3748

first engine controlled variable based on the detected air/fuel ratio (column 21, lines 1-12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to change the intake air quantity in order to adjust the first engine controlled variable according to the detected air/fuel ratio.

In regard to claim 12, Kitahara discloses the claimed invention except for the control unit wherein the correction of the first engine controlled variable is based on the second engine controlled variable. Surnilla teaches another exhaust purifying system where the desired fuel quantity is based on an adaptively learned correction value (Ka) calculated from an error caused by the fuel injector timing (column 9, lines 32-49). It would have been obvious to one having ordinary skill in the art at the time the invention was made to consider the second engine controlled variable—ignition timing—when calculating the overall correction value for the desired air/fuel ratio.

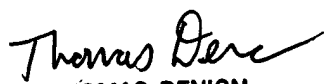
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc I. Nagy whose telephone number is 571-272-2758. The examiner can normally be reached on Monday - Friday 8 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on 571-272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Art Unit: 3748

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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